

----- Forwarded by Garyg Miller/R6/USEPA/US on 06/06/2008 09:06 AM -----

**Susan Roddy/R6/USEPA/US**

06/05/2008 03:32 PM

To  
"Kirby Tyndall" <kirby.tyndall@pbwllc.com>  
cc  
Jon Rauscher/R6/USEPA/US@EPA,  
<Jessica.White@noaa.gov>,  
<LCHAMPAG@tceq.state.tx.us>, Garyg  
Miller/R6/USEPA/US@EPA, Barry  
Forsythe/R6/USEPA/US@EPA, Sing  
Chia/R6/USEPA/US@EPA, Donald  
Williams/R6/USEPA/US@EPA  
Subject  
Re: Gulfco Marine Maintenance - toxicity testing example

Kirby,

I have conferred with the team, and the following are answers to your questions:

- 1) The chronic amphipod study will provide information on direct toxicity to a sediment-dwelling organism. The chronic polychaete study will also provide information on direct toxicity to a sediment-dwelling organism, but for a different taxon. This is analogous for other Region 6 Superfund sites conducting freshwater sediment toxicity tests on 2 toxicity test organisms. The fiddler crab data is for the purpose of addressing risk due to bioaccumulation up a food chain (i.e., for developing site-specific BSAF values)
- 2) Thank you for recollecting the email about using Ampelisca due to the sandy substrate. There has been further discussion with the team, and there are two other factors seen as more important at this juncture. One is the salinity of the Gulfco site, and the other is the ready availability of laboratory capability given the expedited schedule. It is my understanding the Hyallela azteca can be given consideration for this site as well (depending on Gulfco's salinity). Hyallela azteca is polyhaline and the chronic sediment toxicity tests can be run in water up to 20 ppt salinity. And, the laboratory capability for Hyallela azteca toxicity testing is readily available. The second suggested toxicity testing organism would be Leptocheirus (if Gulfco's salinity is too high to run the Hyallela azteca chronic sediment toxicity test) since it is my understanding that laboratory capability is readily available for Leptochirus. Ampelisca would be third on the suggested list given the expedited schedule and the less readily available laboratory capability.
- 3) The preference for the chronic sediment toxicity test for the polychaete would be to use the organism Nereis sp., and to use the 20 day ASTM test.
- 4) For the amphipod and polychaete test, the intent is to run chronic sediment toxicity tests given our previous email allowing 21 day tests to be run (instead of the 28 day test specified in the guidance) due to the expedited schedule. If it turns out that there is time for a 28 day test, then the bioaccumulation data should be collected as well as the chronic toxicity test data.
- 5) For the reference area, Christmas Bay is acceptable.

6) Regarding the compounds to be analyzed in sediments, our expectation is that the same suite of PAHs, metals, and pesticides that were analyzed in your initial analyses would be analyzed for this study as well. The reason is for corroboration of the sediment chemistry data with each of the toxicity test and tissue data results.

Regarding the sediment locations, as per the conversation you had with Larry Champagne of TCEQ this morning, it is acceptable that sampling be conducted at the (10) locations determined from Figure 1 (October 2007) where the midpoint values between the ERL and ERM were exceeded by any contaminants using maximum concentrations for the Phase 2 and Phase 3 data. Each of these locations should be sampled for the suite of PAHs, metals, and pesticides. Should any of the Phase 4 data indicate an exceedance of midpoint values, these stations should be sampled as well.

7) It is unclear why the ecotoxicity values for dibenz (a,h) anthracene and fluorene are lower than the ecotoxicity values for the other PAHs. It may help to consider that for our evaluation, PAHs are considered collectively, such that individual PAH measurements should be summed into high molecular weight, low molecular weight, and total PAH categories for comparisons to ecotoxicity values for these categories. My understanding from TCEQ as to why there are individual ecotoxicity values for some of the PAHs is for situations where certain PAHs are predominant at a sampling, yet the comparison for the summed values would be below either a high or low molecular weight or a total PAH value; in this situation a comparison to ecotoxicity values for individual PAHs would be warranted.

-----"Kirby Tyndall" <kirby.tyndall@pbwllc.com> wrote: -----

To: Jon Rauscher/R6/USEPA/US@EPA

From: "Kirby Tyndall" <kirby.tyndall@pbwllc.com>

Date: 06/03/2008 03:43PM

cc: <Jessica.White@noaa.gov>, <LCHAMPAG@tceq.state.tx.us>, Gary Miller/R6/USEPA/US@EPA, Susan Roddy/R6/USEPA/US@EPA, Barry Forsythe/R6/USEPA/US@EPA, Sing Chia/R6/USEPA/US@EPA, Donald Williams/R6/USEPA/US@EPA

Subject: Re: Gulfco Marine Maintenance - toxicity testing example

Thank you Jon! I have a couple of questions for the trustee group based on the email that I received from Eric Pastor that Gary had sent earlier this week. In that email, there is a request to do chronic amphipod and polychaete sediment toxicity tests and whole body chemistry for fiddler crabs, and co-located sediment chemical analyses.

My questions are as follows:

- 1) In a January 24th memo that we received there was reference to conducting a Leptocheirus study. So, what will the polychaete and/or fiddler crab data provide that a chronic amphipod study will not?
- 2) In the January 24th email string, Susan Roddy makes mention that she thinks Ampelisca are better suited for sandy sediments (which I believe is the situation here). Should we be doing an Ampelisca study instead of a Leptocheirus study?
- 3) Is there a preference for the type of polychaete we study? We can try to do some initial evaluation to determine which is the most prevalent or likely to reside in the sediments near the site but I didn't know if you had a preferred study organism.
- 4) For the amphipod and polychaete bioassays, are we looking at toxicity or bioaccumulation or both?
- 5) I am assuming we would need a reference study area. Is it okay if we collect reference samples from nearby Christmas Bay?

6) Which compounds do you want us to analyze for in sediments north of Marlin and in the Intracoastal Waterway?

North of Marlin -- There is only one compound (dibenz(a,h)anthracene) that exceeds the screening limit for sediment when looking at a 95% UCL compared to the mid-point of the ERL and ERM. Zinc exceeds on a point by point comparison to the midpoint of the ERL and ERM for two of 44 samples but not when comparing the 95% UCL to the mid-point of the ERL and ERM while neither a point by point comparison or the 95% UCL comparison for DDT or lead exceed the midpoint of the ERL and ERM (there are some individual sample exceedances of these compounds when compared to the ERL).

Intracoastal Waterway -- There are a couple of exceedances for the ERL for DDT, nickel, and others but nothing exceeds the midpoint of the ERL and ERM other than dibenz(a,h)anthracene (two samples exceed the midpoint of the ERL and ERM but none exceed the ERM).

So, do we try to pick sediment locations that would most closely provide a concentration gradient for dibenz(a,h)anthracene?

7) After looking at the ERLs and ERMs for the various compounds, particularly the PAHs, it begs the question as to why the dibenz(a,h)anthracene (and fluorene) values are so much lower than the other PAHs. Any ideas? It strikes me as odd that in the human health world, benzo(a)pyrene and dibenz(a,h)anthracene have the same toxicity value but it's very different in the eco world.

I appreciate your timely consideration of my questions and any direction you can offer.

Thanks!

Kirby

for , I'm not sure we can get a true gradient of chemical concentrations in sediment since the location where one compound may exceed a screening criteria is often different than another

2)

----- Original Message -----

From: <Rauscher.Jon@epamail.epa.gov>

To: <kirby.tyndall@pbwllc.com>

Cc: <Jessica.White@noaa.gov>; <LCHAMPAG@tceq.state.tx.us>;

<Miller.Garyg@epamail.epa.gov>; <Roddy.Susan@epamail.epa.gov>;

<Forsythe.Barry@epamail.epa.gov>; <Chia.Sing@epamail.epa.gov>;

<Williams.Donald@epamail.epa.gov>

Sent: Tuesday, June 03, 2008 11:09 AM

Subject: Gulfco Marine Maintenance - toxicity testing example

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> Kirby,

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> I have attached an example of a work plan for soil toxicity testing used

> at another Region 6 site. Appendix D has the Data Quality Objectives.

> Let me know if you need any additional information.

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> Thanks,  
> Jon  
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>  
> (See attached file: FINAL - Plant and Invertebrate Tox Test Work Plan  
> Final version 4-29-08b\_1.pdf)  
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>  
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